

Functionalization of exfoliated black phosphorus with metal nanoparticles and application in catalysis

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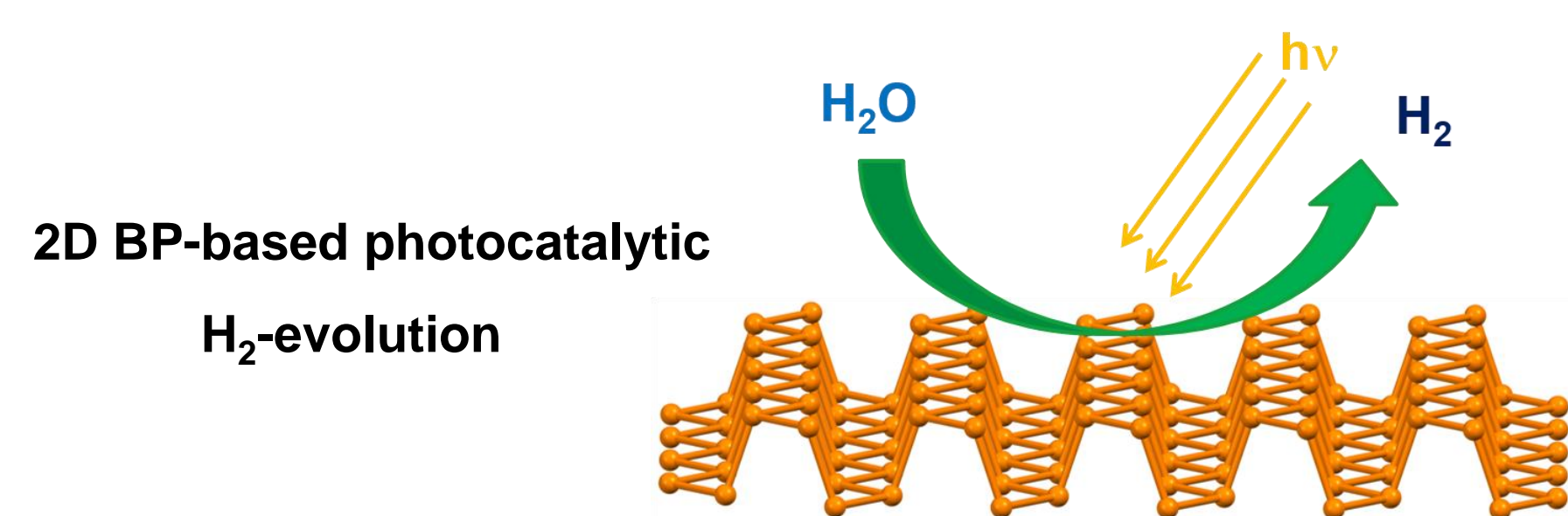
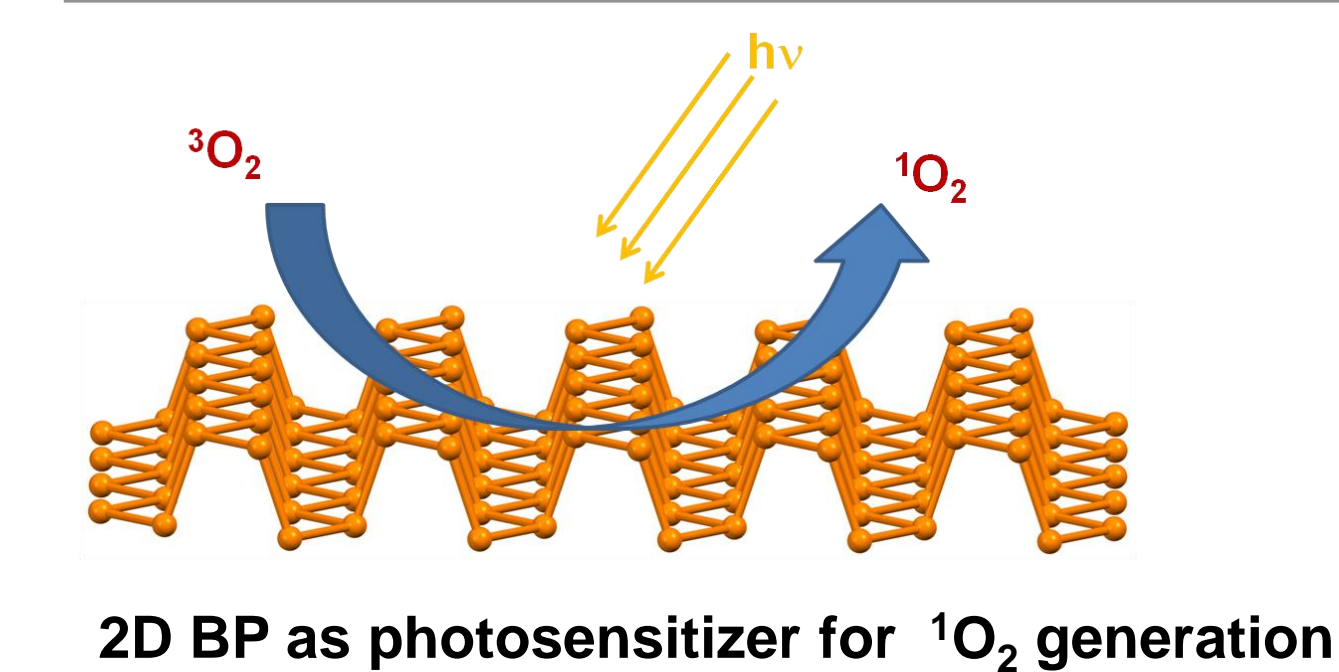
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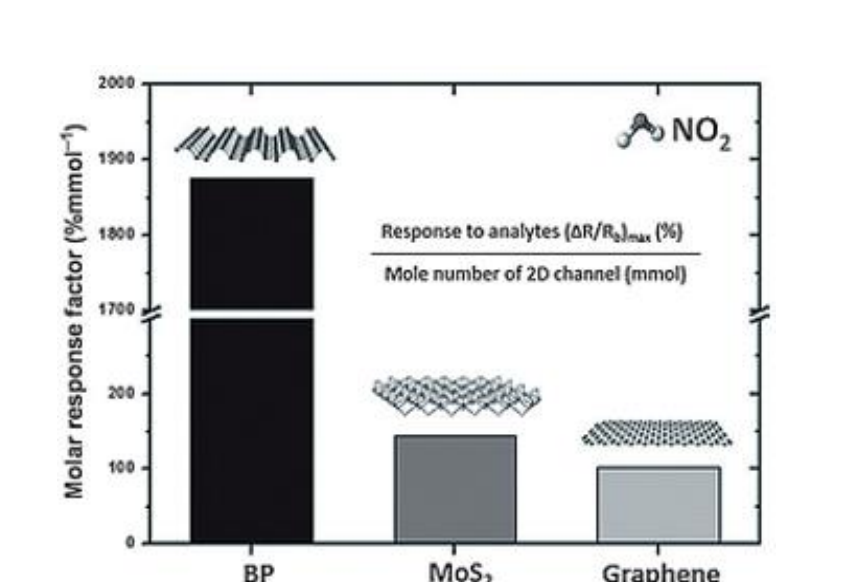
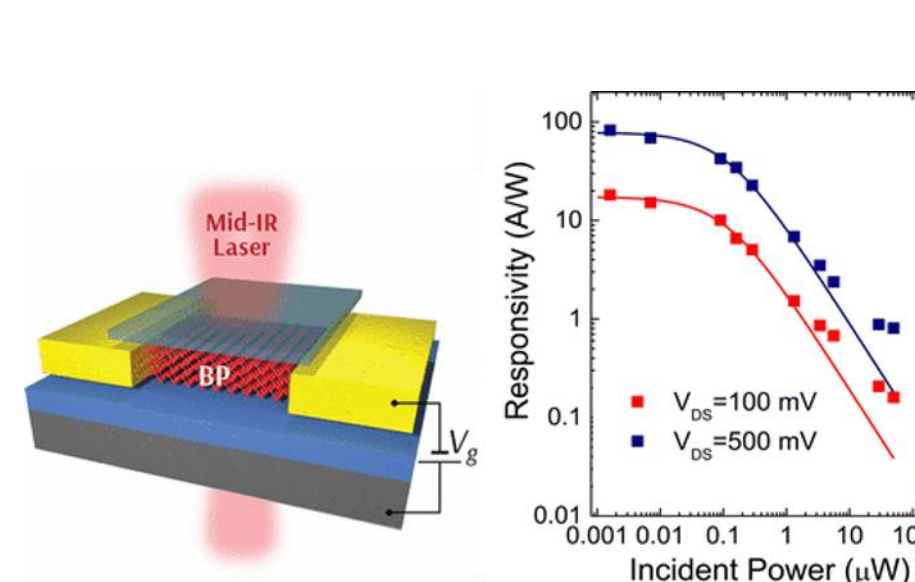
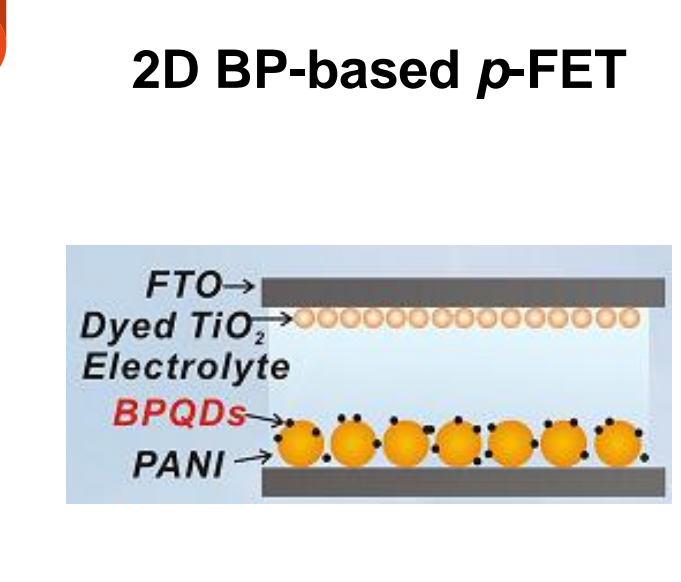
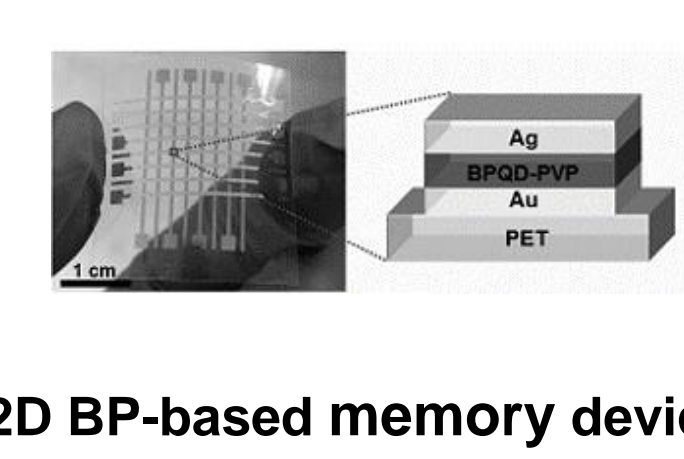
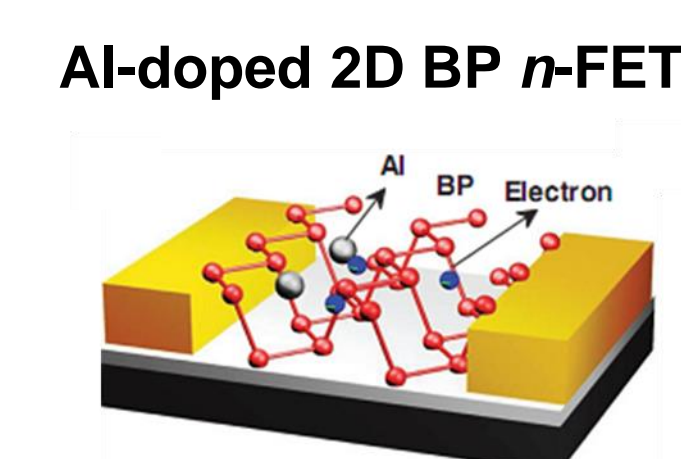
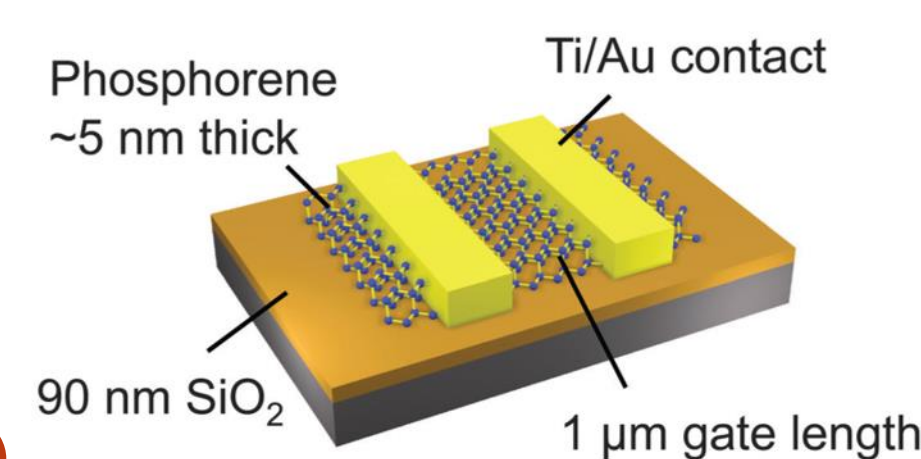
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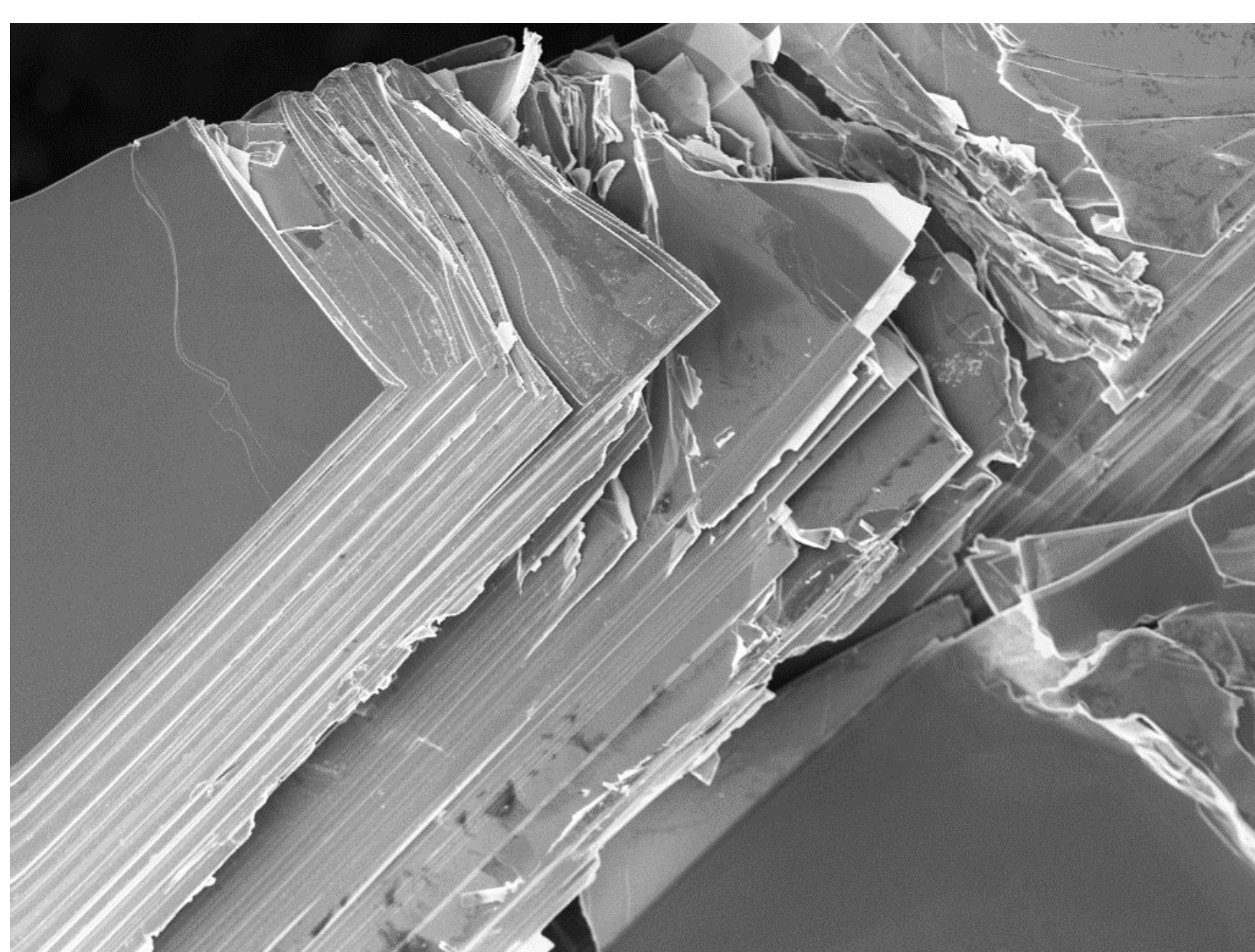
Few-layer black phosphorus (2D BP): structure and properties [1]



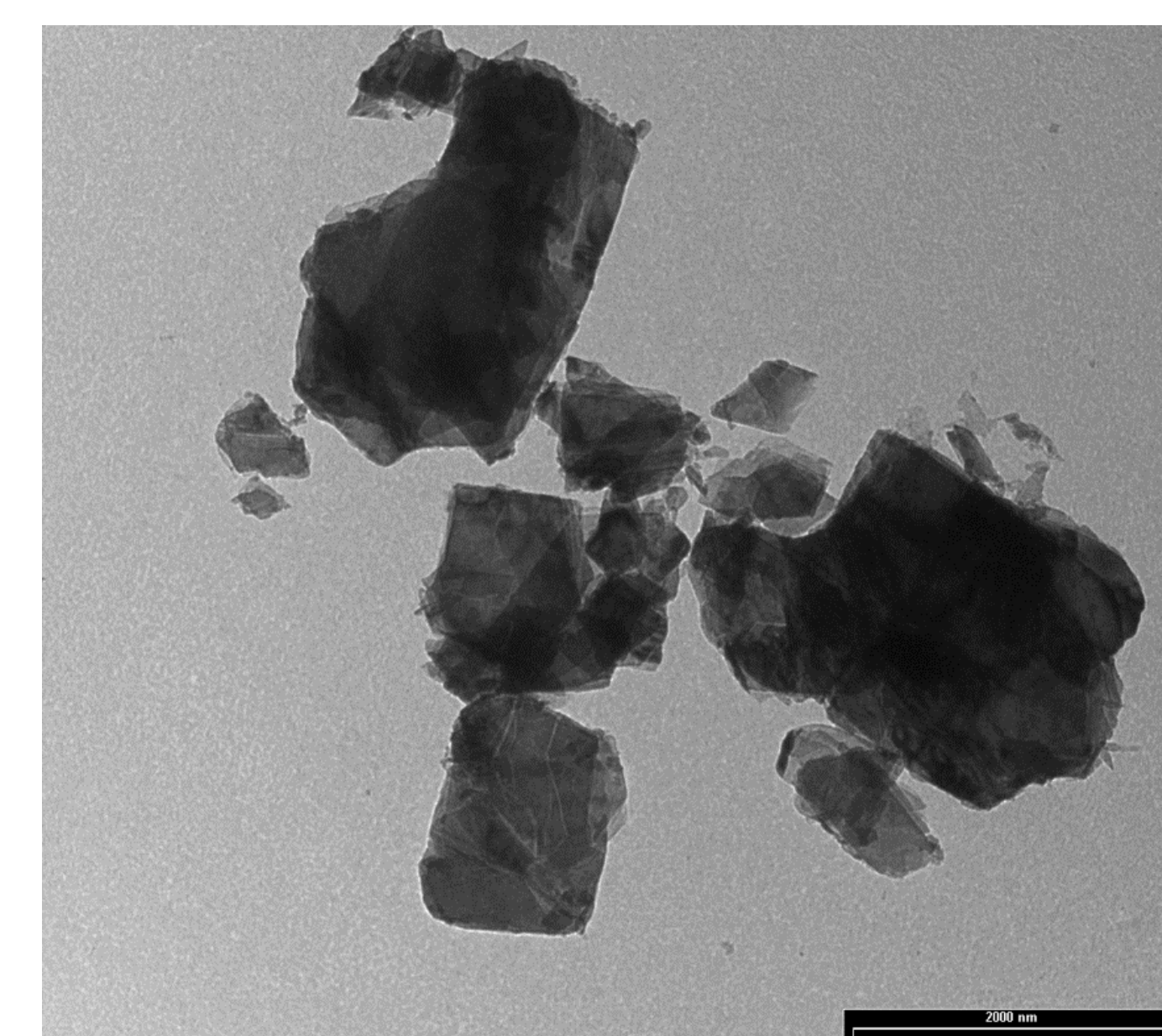
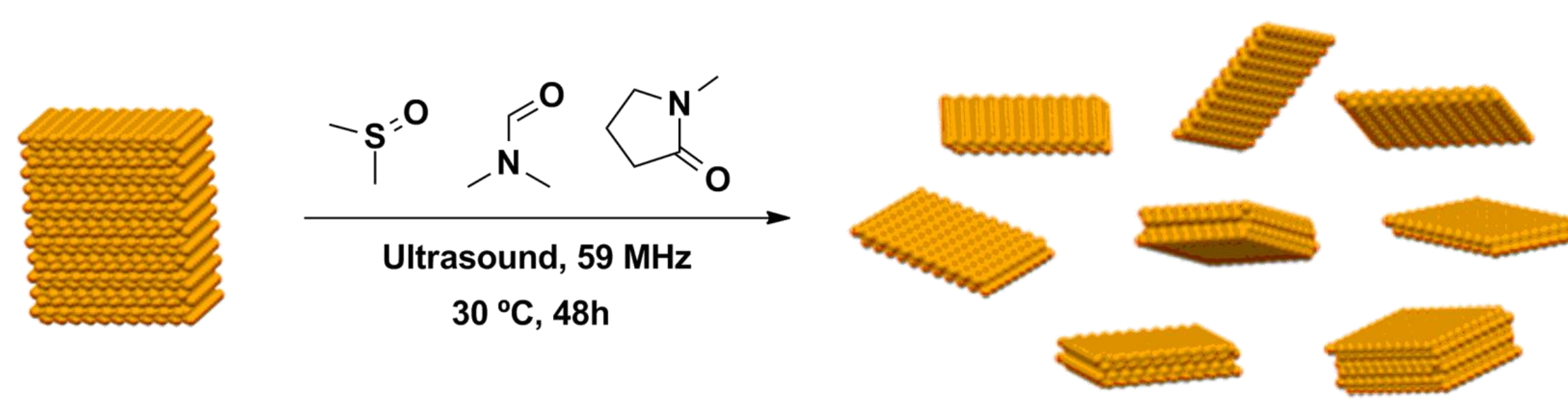
- Natural semiconductor
- Direct and tunable band gap
- Anisotropic structure
- Anisotropic mechanical, electric, thermal, optical, carrier transport properties
- High hole mobility
- High flexibility



Synthesis of few-layer black phosphorus[2]

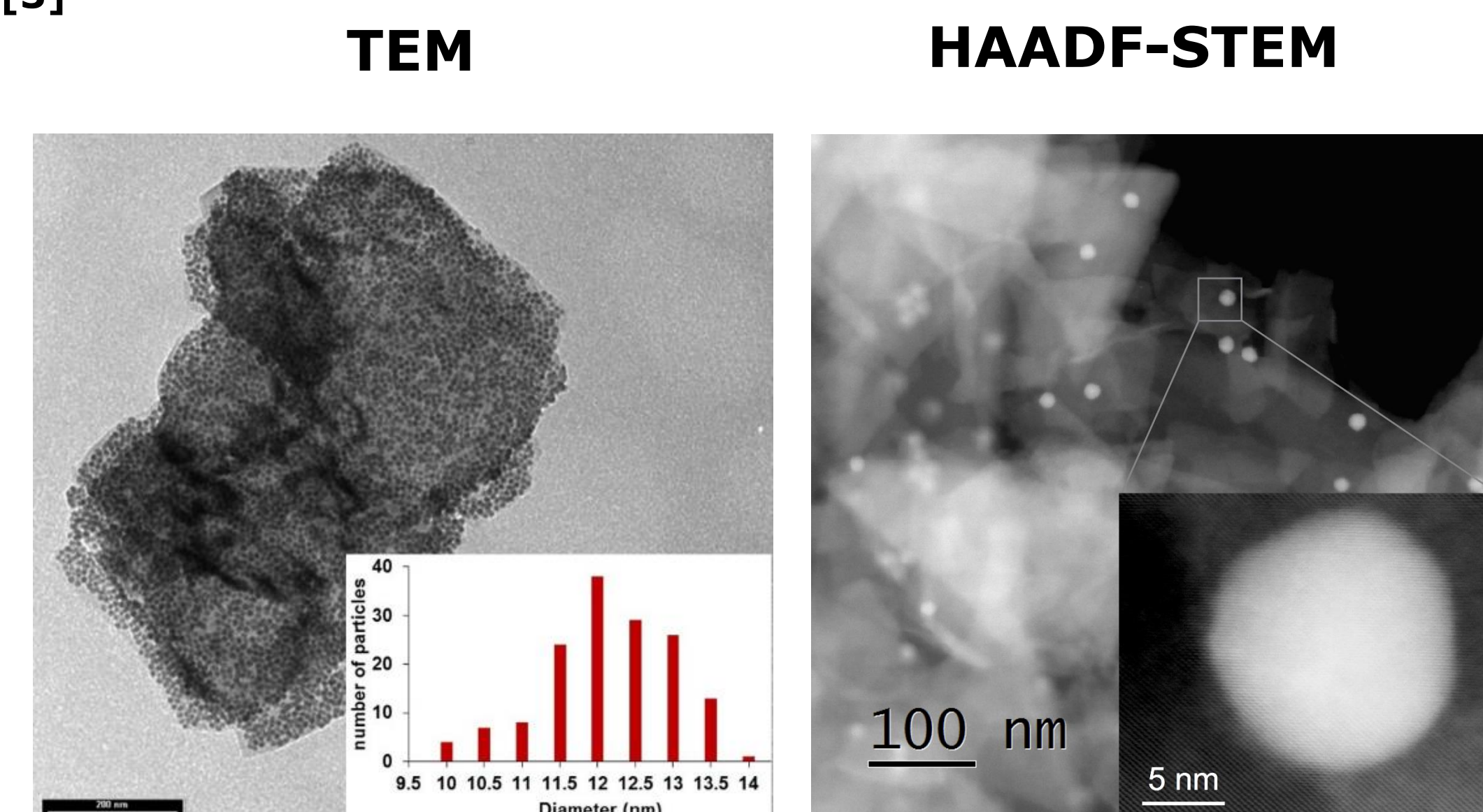
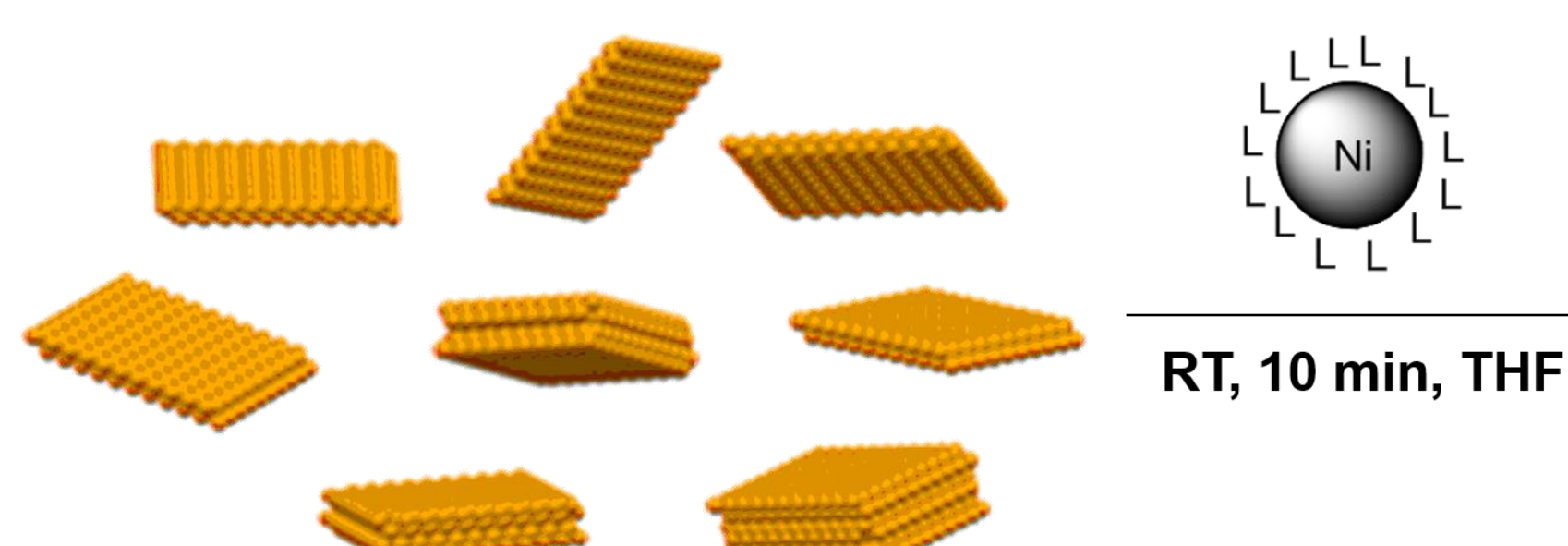
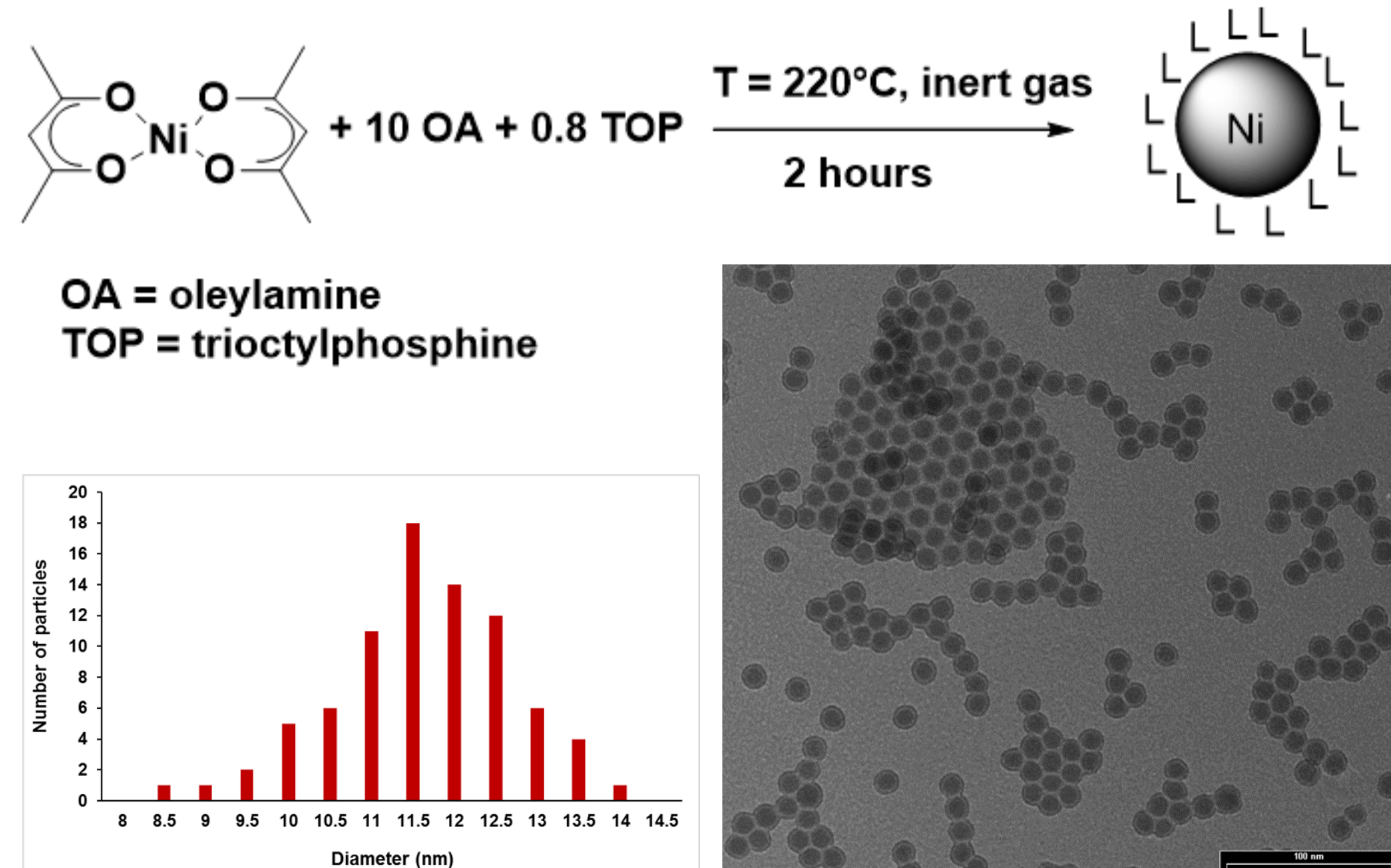


SEM of bulk black phosphorus

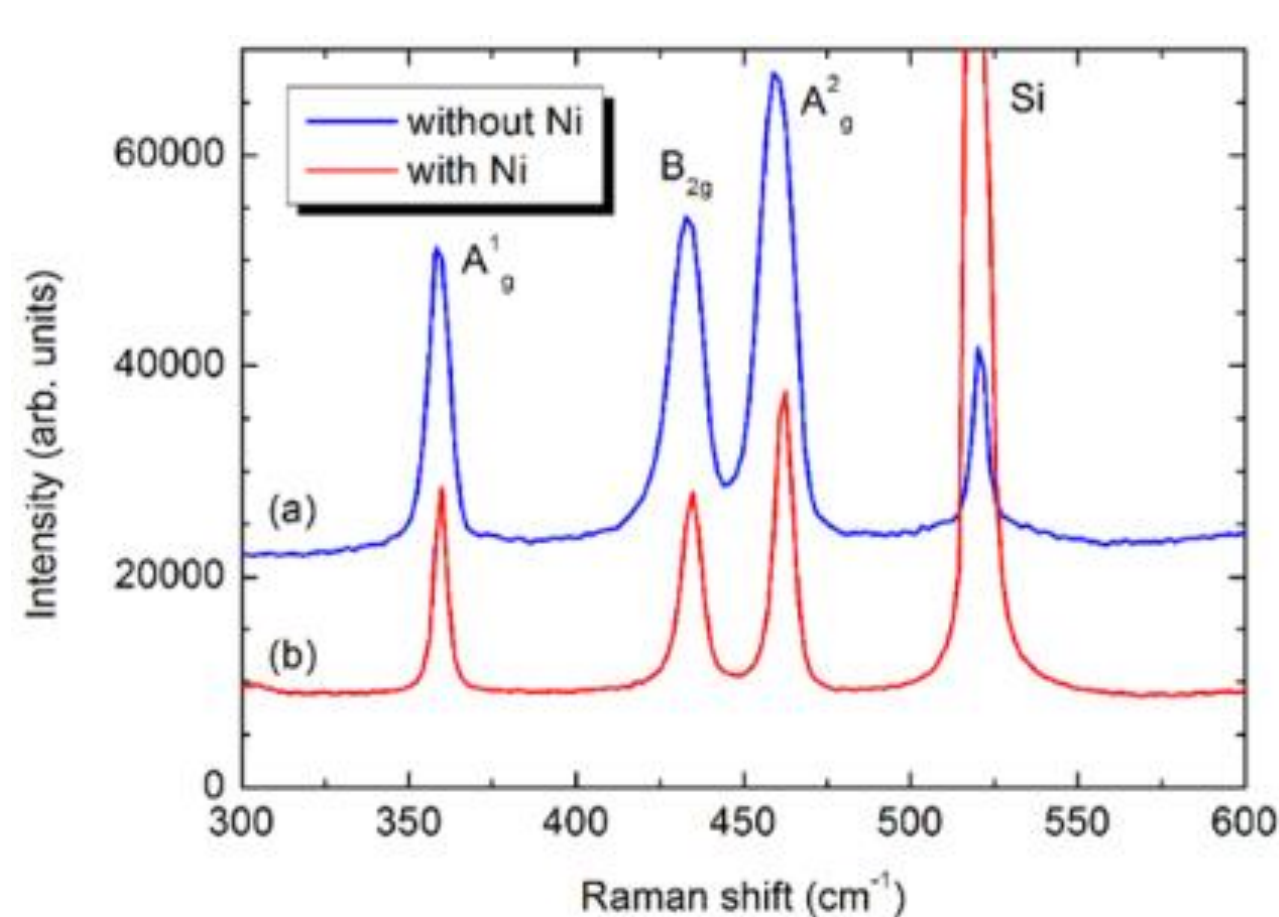


TEM of few-layer black phosphorus

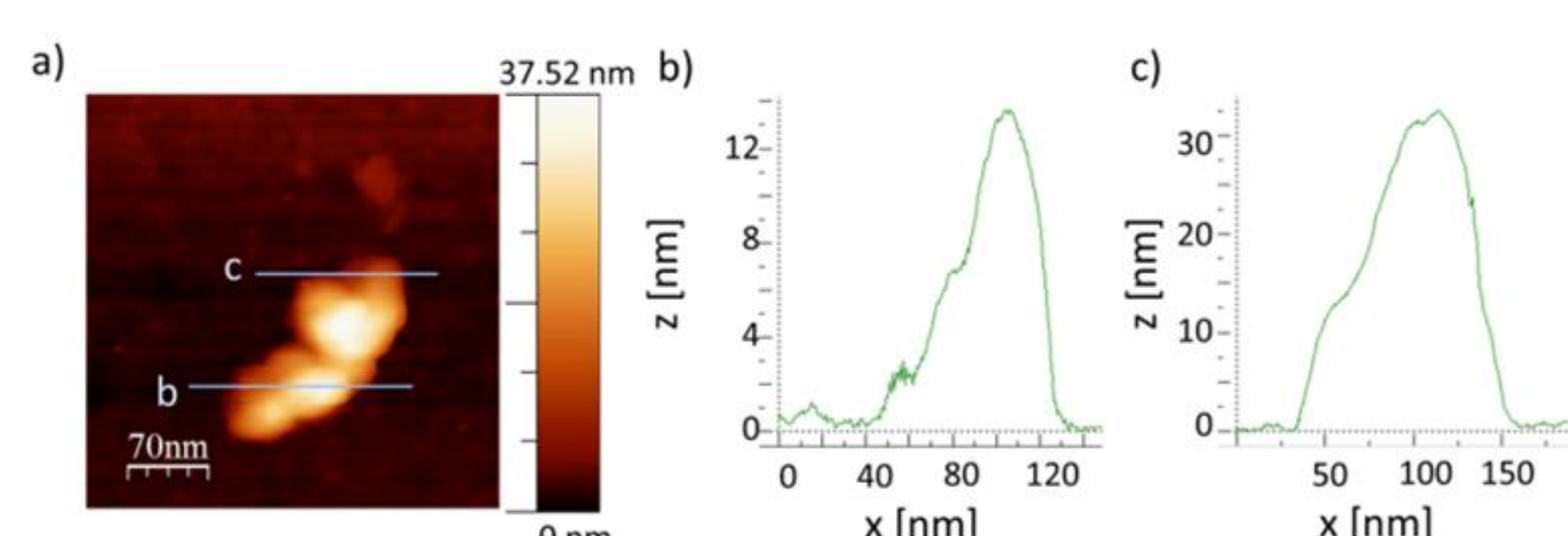
Preparation of the nanohybrid Ni/2D BP[3]



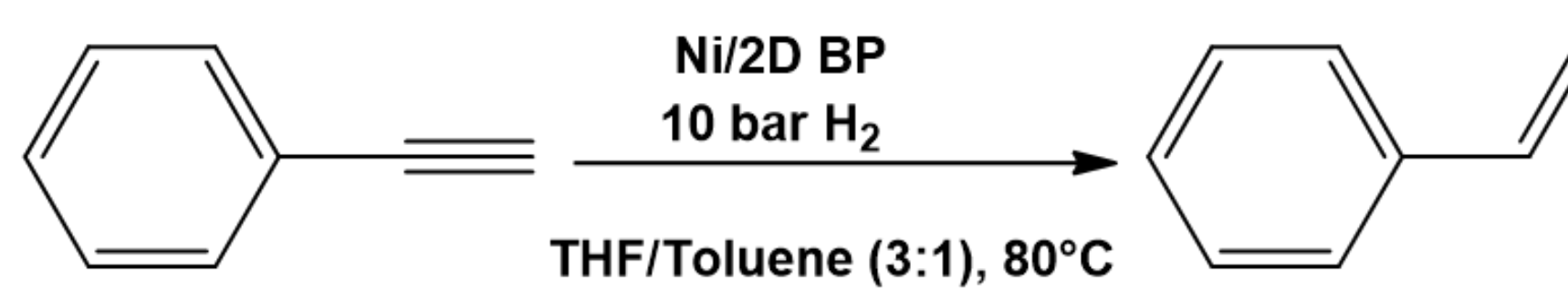
RAMAN



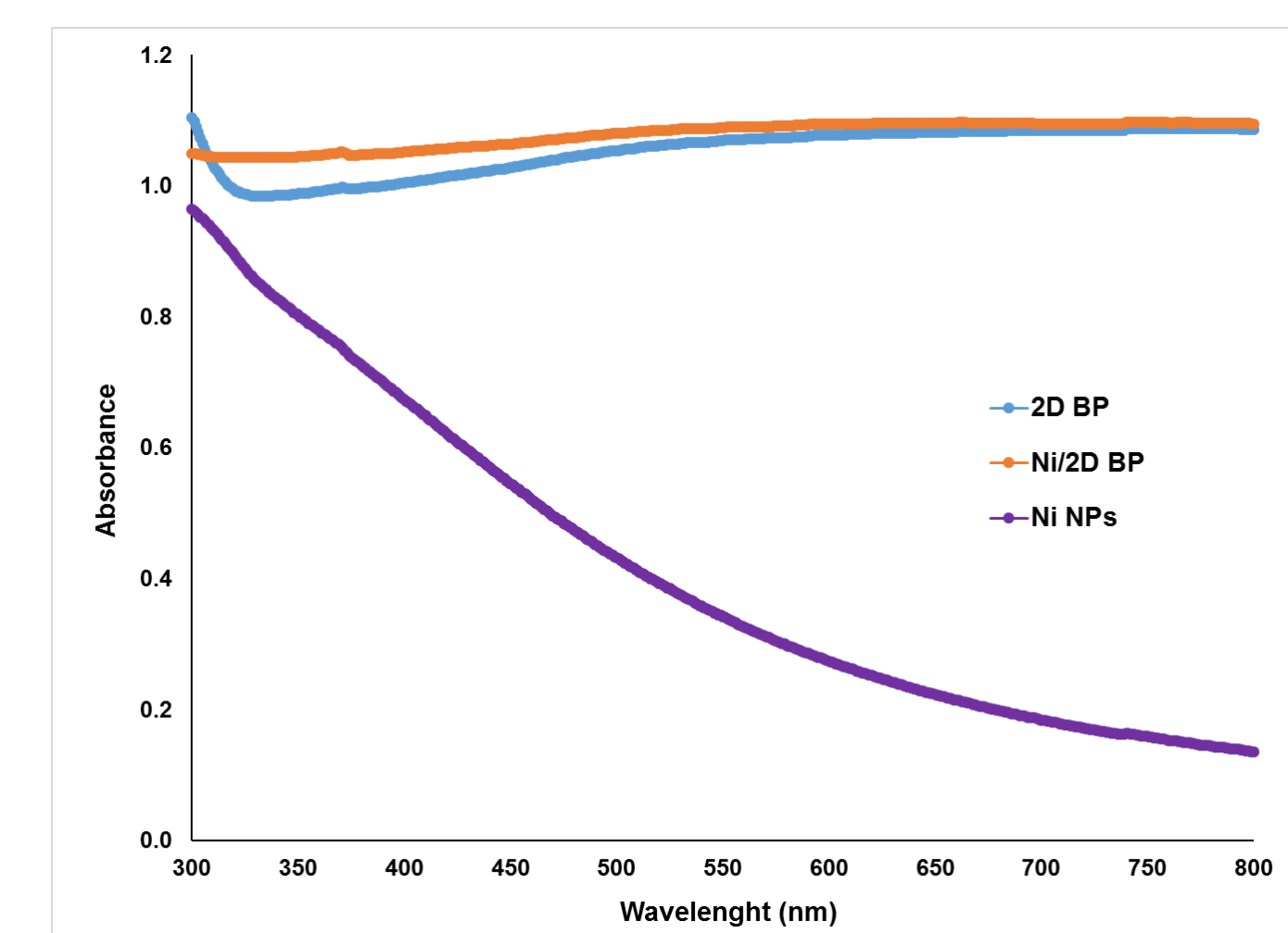
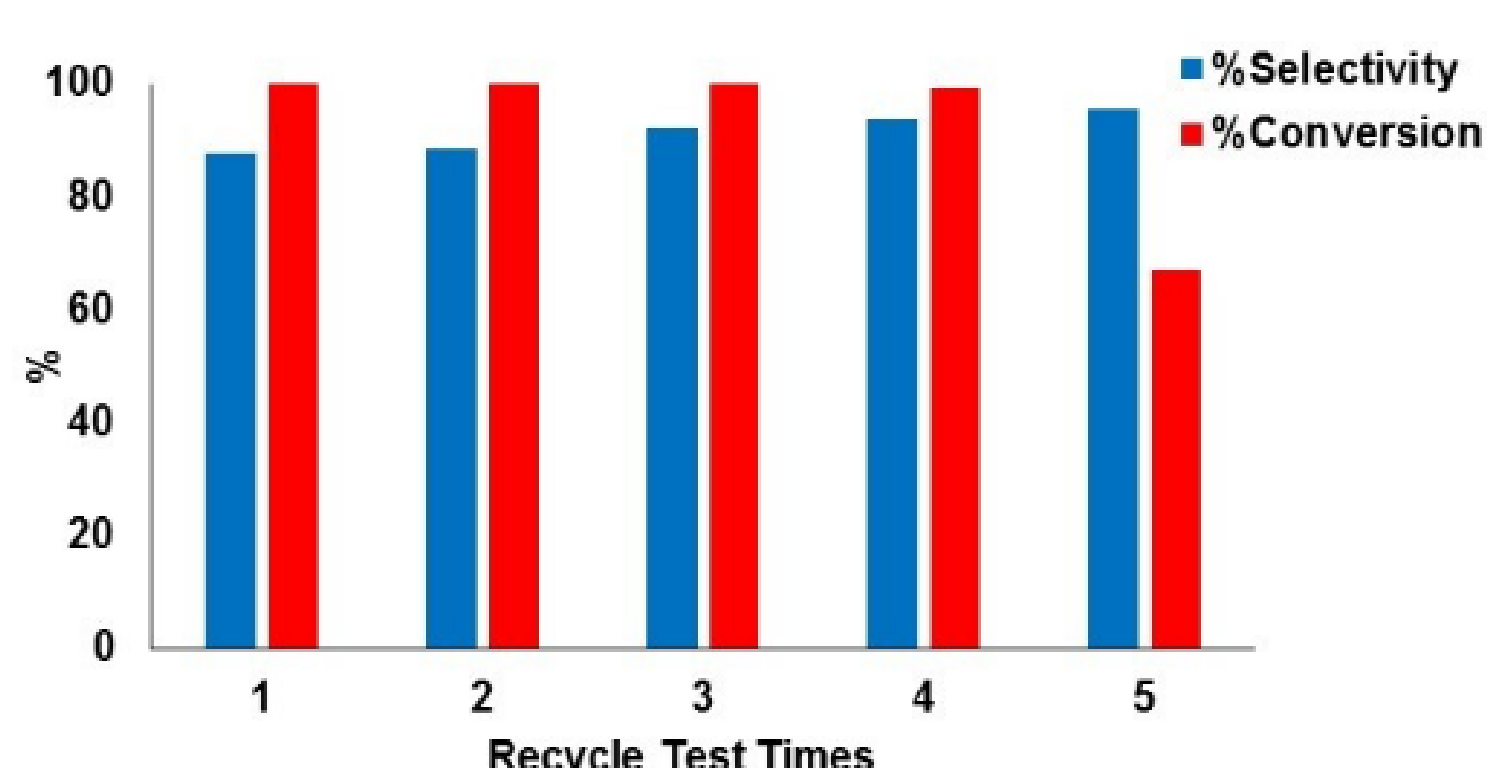
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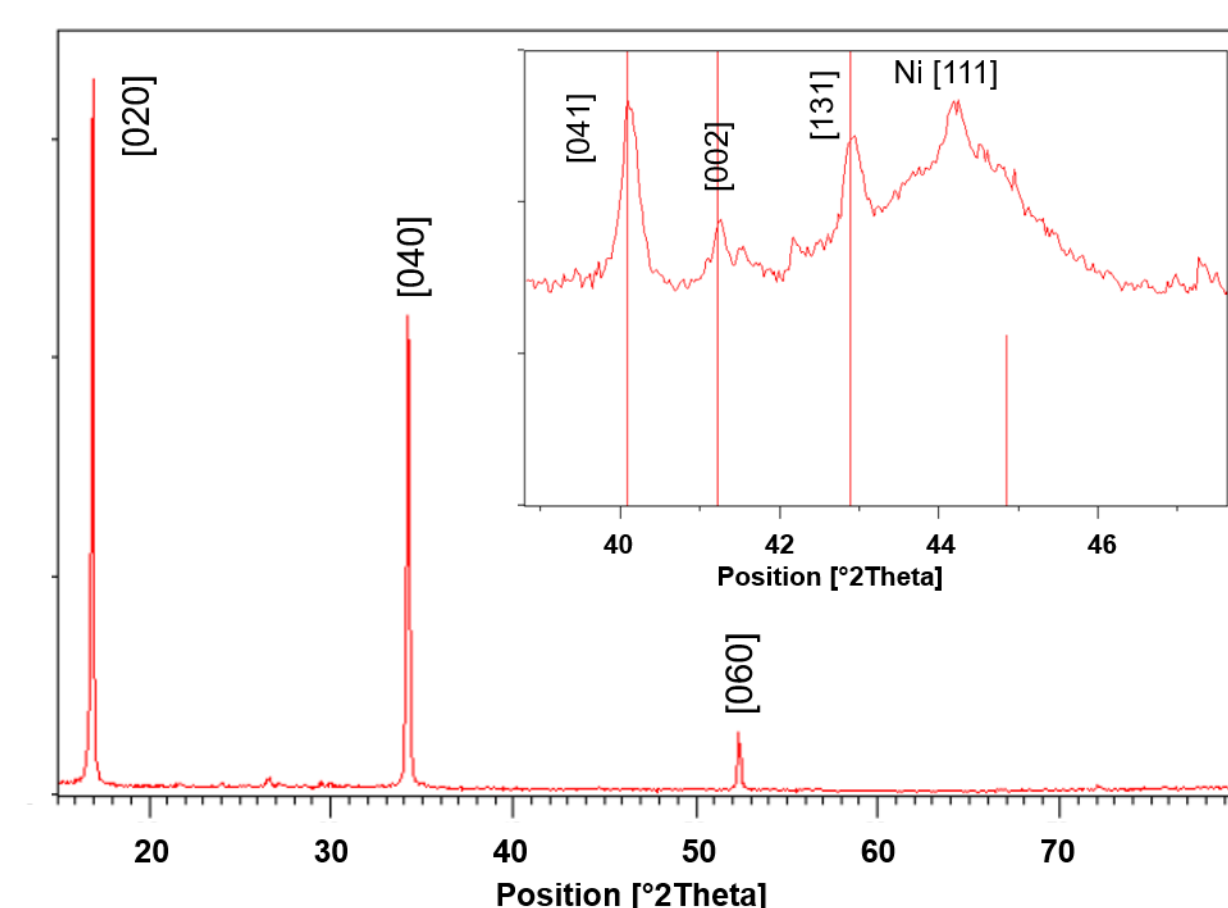
Catalytic semihydrogenation



Recycling tests



UV-Vis



PXRD

References

- [1] Pengfei Chen *et al* *2D Mater.*, **2018**, *5*, 014002.
- [2] M. Serrano-Ruiz, M. Caporali, A. Ienco, V. Piazza, S. Heun, M. Peruzzini, *Adv. Mater. Interfaces*, **2016**, *3*, 1500441.
- [3] M. Caporali, M. Serrano-Ruiz, F. Telesio, S. Heun, G. Nicotra, C. Spinella, M. Peruzzini, *Chem. Commun.* **2017**, *53*, 10946-10949;

Acknowledgements: Thanks are expressed to EC for funding the project PHOSFUN "Phosphorene functionalization: a new platform for advanced multifunctional materials" (ERC ADVANCED GRANT 2015– 2019).